

Discovery Learning (Bruner)

Discovery Learning focuses (as the name implies) on learning through discovery. Students are encouraged to explore various possibilities and draw conclusions based on what they find. Students problem solve using their past experience and knowledge to discover new facts and theories. These new concepts should be attainable and constructed on the foundations that the students already have. The teaching methods associated with this theory promote active student engagement and develop further problem solving skills.

Problem-Based Learning (PBL)

Problem based learning instills learning through the students attempt to resolve issues. Real world problems are presented to the students and through attempting a solution they learn various techniques through their success/failure. Often there are no right answers in problem based learning as the emphasis is placed on the process and rational rather than the end result. Students are self-directed through this type of learning with the teacher acting as more of a facilitator leaving the students to explore on their own.

Situated Learning Theory (Lave)

Situated learning is the idea that learning cannot be done intentionally, but rather is done through authentic contexts. Learning cannot be force fed to someone, but instead be introduced naturally through social interactions or relationships with other people. The knowledge base of the students is built and expanded through their social interactions. Teachers encourage this type of learning by expanding lessons outside of the classroom and making it a part of the students' lives.

Emotional Intelligence (Goleman)

Emotional intelligence refers to a person's ability to recognize, control, and react to, their own emotions and those around them. It involves being self-aware and self-regulatory of your own emotions; your strengths, weaknesses and how to not let them get the better of you. It also means having intelligent social skills, such as knowing how to appropriately react to other's emotions. People's emotions come out in almost every social encounter and to facilitate learning, the appropriate responses must be made. Empathy and honesty help regulate emotions and allow groups of people to learn productively in a class setting.

Why it's Useful in Math

To have successful social interactions a certain level of emotional intelligence is always required. In a leadership role, such as a teacher, this is even more of a necessity. Almost all class management issues and poor student choices are a result of emotional decision making; doing or saying something purely influenced by the emotions attached to it, while ignoring logical or ethical reasoning. To overcome these obstacles in a math class (or any class for that matter) the teacher requires a high level of emotional intelligence. Students often have resentment towards math courses for various reasons (they're mandatory, difficult, or students have bad math experiences in the past) and consequently have strong emotional opinions on the course in general. Part of the teacher's role in the class will be to interpret their students' behaviour/emotions and act on them in a way that still promotes a positive learning environment in the classroom. Teachers will also be responsible for controlling their own emotions towards students, and react to students' outburst or disrespectful behaviour in a controlled and responsible manner.

Discovery learning, problem based learning, and situated learning are closely related theories and together make a concise idea of what successful learning is. As a group, these theories show that learning is constructive. Students learn by taking their prior knowledge and applying it to new situations and problems. The problems they attempt to solve should be applicable and naturally occurring in their lives, not simply forced upon them. Students should explore various options and methods, discovering for themselves through their successes and failures. Math makes no sense to many people because there are disconnects between what they already know and the abstract ideas being taught. Math requires constructive learning, and therefore should always be taught so that it links together and builds off the established knowledge of the student. Students should see the need for the problem solving skills presented through mathematics, and recognize the real world problems these skills help solve. In seeing the value of the thought process, and how it can lead to more effective solutions, students gain a better appreciation for math and receive a more effective learning experience. I often use the analogy of professional athletes lifting weights at the gym; often this is seen in commercials or on sports channels. I ask the question, "Why do they bother putting all that weight above them and practice lifting it? At no point in the game are they every required to lift things." Most students understand that there is importance for athletes to work out though, and their skills in the game will improve as a result. To me, math is the workout of life; the step by step formulas or equations are often never used again, but the thinking process and problem solving skills you gain become applicable and useful in all aspects of your life.

Symbol Explanation

I made the “fruit smoothie guide to learning”. The different ingredients are present in each smoothie, but often added in different quantities and the outcome of the smoothie is controlled by the blender. Without the control of the blender no smoothie can be made. This parallels my theories on learning; emotions are the overall control of one’s ability to learn and depending on what is being taught various amounts of the other techniques can be incorporated (but the best learning happens when they are all present).

